

HP StorageWorks

4000/6000/8000 Enterprise Virtual Array connectivity for Linux installation and reference guide

Part number: 5697-5257
First edition: May 2005



Legal and notice information

Copyright © 1998-2005 Hewlett-Packard Development Company, L.P.

Hewlett-Packard Company makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

This document contains proprietary information, which is protected by copyright. No part of this document may be photocopied, reproduced, or translated into another language without the prior written consent of Hewlett-Packard. The information contained in this document is subject to change without notice.

Compaq Computer Corporation is a wholly-owned subsidiary of Hewlett-Packard Company.

Linux® is a registered trademark of Linus Torvalds.

Hewlett-Packard Company shall not be liable for technical or editorial errors or omissions contained herein. The information is provided "as is" without warranty of any kind and is subject to change without notice. The warranties for Hewlett-Packard Company products are set forth in the express limited warranty statements for such products. Nothing herein should be construed as constituting an additional warranty.

Microsoft, Windows, Windows NT, and Windows XP are U.S. registered trademarks of Microsoft Corporation.

Linux® is a registered trademark of Linus Torvalds.

UNIX® is a registered trademark of The Open Group.

4000/6000/8000 Enterprise Virtual Array connectivity for Linux installation and reference guide

Contents

About this Guide	5
Overview	5
Intended audience	5
Related documentation	6
Conventions	6
Document conventions	6
Text symbols	6
Getting help	7
HP technical support	7
HP Storage web site	7
HP authorized reseller	7
 1 Host connectivity	 9
Downloading Fibre Channel adapters firmware	9
Installing Linux components	10
Upgrading the Linux components	10
Upgrading qla2x00 RPMs	11
Third-party storage detection	12
Compiling the driver for multiple installed kernels	12
Uninstalling the Linux components	12
Using the source RPM	12
Operating system multipathing	14
HP StorageWorks Command View EVA and the Storage System Scripting utility	14
 2 Testing connections to the Enterprise Virtual Array	 15
Adding hosts	15
Creating and presenting virtual disks	15
Verifying virtual disks from the host	16
Configuring virtual disks from the host	16
 Index	 17

Tables

1 Document conventions 6

About this Guide

This installation and reference guide provides information to help you:

- Connect your host to an Enterprise Virtual Array storage systems
- Get pointers to the latest layered applications used with the Enterprise Virtual Array

“About this Guide” topics include:

- [Overview](#)
- [Conventions](#)
- [Getting help](#)

Overview

Overview topics include:

- [Intended audience](#)
- [Related documentation](#)

Intended audience

This book is intended for use by storage administrators who are experienced with the following:

- Host environments, such as Windows® 2000, Windows NT® , Windows Server 2003, Sun Solaris, OpenVMS, Tru64 UNIX®, HP-UX, IBM AIX, Linux®, Novell NetWare
- Enterprise Virtual Array, 4000/6000/8000 storage systems

Related documentation

In addition to this guide, HP provides the following corresponding information:

- *HP StorageWorks 4000/6000/8000 Enterprise Virtual Array connectivity for Linux release notes*
- *HP StorageWorks Storage System Scripting utility reference guide*
- *HP StorageWorks Interactive Help for Command View EVA*

Conventions

Conventions consist of the following:

- [Document conventions](#)
- [Text symbols](#)

Document conventions

This document follows the conventions in [Table 1](#).

Table 1 Document conventions

Convention	Element
Medium blue text: Figure 1	Cross-reference links and e-mail
Medium blue, underlined text (http://www.hp.com)	Web site addresses
Bold font	<ul style="list-style-type: none">• Key names• Text typed into a GUI element, such as into a box• GUI elements that are clicked or selected, such as menu and list items, buttons, and check boxes
<i>Italics font</i>	Text emphasis
Monospace font	<ul style="list-style-type: none">• File and directory names• System output• Code• Text typed at the command-line
<i>Monospace, italic font</i>	<ul style="list-style-type: none">• Code variables• Command-line variables
Monospace, bold font	Emphasis of file and directory names, system output, code, and text typed at the command line

Text symbols

The following symbols may be found in the text of this guide. They have the following meanings:



CAUTION:

Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.



NOTE:

Text set off in this manner presents commentary, sidelights, or interesting points of information.

Getting help

If you still have a question after reading this guide, contact an HP authorized service provider or access our web site: <http://www.hp.com>.

HP technical support

Telephone numbers for worldwide technical support are listed on the following HP web site: <http://www.hp.com/support/>. From this web site, select the country of origin.



NOTE:

For continuous quality improvement, calls may be recorded or monitored.

Be sure to have the following information available before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

HP Storage web site

The HP web site has the latest information on this product, as well as the latest drivers. Access storage at: <http://www.hp.com/country/us/eng/prodserv/storage.html>. From this web site, select the appropriate product or solution.

HP authorized reseller

For the name of your nearest HP authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, see the HP web site for locations and telephone numbers: <http://www.hp.com>.

1 Host connectivity

This chapter provides host connectivity information and links to components you need to support your operating system with an Enterprise Virtual Array storage system. It is important that you use the topics in this chapter in the following order:

- [Downloading Fibre Channel adapter firmware](#)
- [Installing Linux components](#)
- [Upgrading the Linux components](#)
- [Uninstalling the Linux components](#)
- [Using the source RPM](#)
- [Operating system multipathing](#)
- [Using the Storage System Scripting utility](#)

Downloading Fibre Channel adapters firmware

Supported Fibre Channel adapters (FCAs) must be installed in the host server in order to communicate with the Enterprise Virtual Array. You can download the latest version of the Fibre Channel adapter firmware at the following web site:

<http://h18006.www1.hp.com/storage/saninfrastructure.html>.

Refer to the host-specific release notes for a list of supported Fibre Channel adapters.

Installing Linux components

The `INSTALL` script installs the `hp_qla2x00src` RPM and the `fibreutils` RPM for the following architectures:

- `x86`
- `x86_64`
- `ia64`

For a fresh installation, this script takes no arguments and is invoked by issuing the following command:

```
# ./INSTALL
```

The driver sets the load time parameter for failover mode depending upon the mode of the currently loaded driver. If no driver is loaded, the default mode is `failover on`. If you want to explicitly turn failover on, you can use the `INSTALL` script with the `-f` option, as shown in the following example:

```
# ./INSTALL -f
```

You can install the driver manually using the RPM command. There are two `hp_qla2x00src` RPMs.

- Use the 2.4 kernel-based distributions for version 7.xx.
- Use the 2.6 kernel-based distributions for version 8.xx.



NOTE:

You can see what kernel version you are running by executing the `uname -r` command.

Based upon which kernel version you are running, choose from the following options to install the driver RPM manually:

- Use the following command to install the `hp_qla2x00src` RPM on a fresh system:

```
# rpm -ivh hp_qla2x00src-version-revision.linux.rpm
```
- Use the following command to install the `hp_qla2x00src` RPM without running the driver build scripts:

```
# rpm -ivh --noscripts hp_qla2x00src-version-revision.linux.rpm
```

Upgrading the Linux components

If you have any installed components from a previous solution kit or driver kit such as the `qla2x00` RPM, invoke the `INSTALL` script with no arguments as shown in the following example:

```
# ./INSTALL
```

To manually upgrade the components, choose from one of the following kernel distributions:

- For 2.4 kernel based distributions, use version 7.xx.
- For 2.6 kernel based distributions, use version 8.xx.

Based upon which kernel version you are running, choose from the following to upgrade the driver RPM manually:

- Use the following command for the `hp_qla2x00src` RPM:

```
# rpm -Uvh hp_qla2x00src-version-revision linux.architecture.rpm
```
- Use the following command for `fibretutils` RPM:

```
# rpm -e fibretutils
```



```
# rpm -ivh fibretutils-version-revision.linux.architecture.rpm
```

Upgrading qla2x00 RPMs

If you have a `qla2x00` RPM from HP installed on your system, use the `INSTALL` script to upgrade from `qla2x00` RPMs. The `INSTALL` script removes the old `qla2x00` RPM and installs the new `hp_qla2x00src` while keeping the driver settings from the previous installation. The script takes no arguments. Use the following command to run the `INSTALL` script:

```
# ./INSTALL
```



NOTE:

If you are going to use the failover functionality of the QLA driver, uninstall Secure Path and reboot first before you attempt to upgrade the driver. Failing to do so can cause a kernel panic.

Third-party storage detection

The preinstallation portion of the RPM contains code to check for non-HP storage. The reason for doing this is so that the RPM does not overwrite any settings that another vendor may be using. You can skip the detection by setting the environmental variable `HPQLAX00FORCE` to `y` by issuing the following commands:

```
# HPQLA2X00FORCE=y  
  
# export HPQLA2X00FORCE
```

You can also use the `-F` option of the `INSTALL` script by entering the following command:

```
# ./INSTALL -F
```

Compiling the driver for multiple installed kernels

If your system has multiple kernels installed on it, you can compile the driver for all the installed kernels by setting the `INSTALLALLKERNELS` environmental variable to `y` and exporting it by issuing the following commands:

```
# INSTALLALLKERNELS=y  
  
# export INSTALLALLKERNELS
```

You can also use the `-a` option of the `INSTALL` script by entering the following command:

```
# ./INSTALL -a
```

Uninstalling the Linux components

To uninstall the components, you can use the `INSTALL` script with the `-u` option as shown in the following example:

```
# ./INSTALL -u
```

If you want to manually uninstall all the components or you want to uninstall just one of the components, use one or all of the following commands:

```
# rpm -e fibreutils  
  
# rpm -e hp_qla2x00  
  
# rpm -e hp_qla2x00src
```

Using the source RPM

In some cases, you may have to build a binary `hp_qla2x00` RPM from the source RPM and use that manual binary build in place of the scripted `hp_qla2x00src` RPM. You need to do this if your production servers do not have the kernel sources and `gcc` installed.

If you need to build a binary RPM to install, you will need a development machine with the same kernel as your targeted production servers. You can install the binary RPM-produced RPM methods on your production servers.

**NOTE:**

The binary RPM that you build works only for that kernel and configuration that you build on (and possibly some errata kernels). Ensure that you use the 7.xx version of the `hp_qla2x00` source RPM for 2.4 kernel-based distributions and the 8.xx version of the `hp_qla2x00` source RPM for 2.6 kernel-based distributions.

Use the following procedure to create the binary RPM from the source RPM:

1. Choose from one of the following options:

- Enter the following command:

```
# ./INSTALL -S
```

**NOTE:**

If you execute the `# ./INSTALL -S` command, you do not have to complete step 2 through step 4.

- Install the source RPM by issuing the following command:

```
# rpm -ivh hp_qla2x00-version-revision.src.rpm
```

2. Choose from one of the following directories depending upon your Linux distribution:

- For Red Hat distributions, enter the following command:

```
/usr/src/redhat/SPECS
```

- For SuSE distributions, enter the following command:

```
/usr/src/packages/SPECS
```

3. Build the RPM by using the following command:

```
# rpmbuild -bb hp_qla2x00.spec
```

**NOTE:**

The RPM command contains the RPM build functionality in some of the older Linux distributions.

At the end of the command output there is a line that displays the following message:

```
"Wrote: ...rpm".
```

This line displays the location of the binary RPM.

4. Copy the binary RPM to the production servers and install it using the following command:

```
# rpm -ivh hp_qla2x00-version-revision.architecture.rpm
```

Operating system multipathing

Multipathing provides a multiple-path environment for your operating system. More information about multipathing is available the following web site:
<http://h18006.www1.hp.com/products/sanworks/multipathoptions/index.html>.

HP StorageWorks Command View EVA and the Storage System Scripting utility

The Storage System Scripting utility (SSSU) is delivered as part of HP StorageWorks Command View EVA. The SSSU is a command line interface (CLI) that issues commands directly to the controller. You can locate HP StorageWorks Command View EVA including the SSSU at the following web site:
<http://h18006.www1.hp.com/products/storage/software/cmdvieweva/index.html>.

2 Testing connections to the Enterprise Virtual Array

This chapter describes how to test connections between the operating system host server and the Enterprise Virtual Array. Virtual disks are set up and presented to your host server in order to test the connectivity and to begin using the disks. Topics in this chapter include the following:

- Adding hosts
- Creating and presenting virtual disks
- Verifying virtual disks from the host
- Configuring virtual disks from the host

Adding hosts

You can add a host using Command View EVA by performing the following procedure. You need to add each FCA installed in the host system in order for the host to work with the Enterprise Virtual Array.

1. Collect information on World Wide Names (WWNs) for each FCA on your server. You need this information when choosing the host FCAs in Command View EVA.



NOTE:

Adding hosts through the Command view EVA software consists of adding each FCA adapter installed in the host. When you add the first adapter, you use the Add Host function, but when you add subsequent adapters, you use the Add Port function. Ensure that you add a port for each active FCA. For more information on using Command View EVA, refer to *HP StorageWorks Interactive Help for Command View EVA*.

2. Add the host using Command View EVA.
3. Ensure that the host FCAs have been added by inspecting the Host folder in the Navigation tree of Command View EVA.



NOTE:

The host type for Linux hosts should be set to Sun Solaris.

Creating and presenting virtual disks

Use the following procedure to create and present additional virtual disks to the host servers:

1. Create a virtual disk on the Enterprise Virtual Array using Command View EVA.
2. Set values for the following parameters:
 - Virtual disk name
 - Vraid level
 - Size
 - Present to host (the host you just created)

3. Select a LUN number if you chose a specific LUN on the Virtual Disk Properties page.

**NOTE:**

You must set the host connection type to Sun Solaris.

Verifying virtual disks from the host

To verify that you can see the virtual disks that you just created for the host, enter the following command:

```
# more /proc/scsi/scsi
```

The output display is a list of all SCSI devices your server sees. An entry for an EVA LUN looks similar to the following:

```
Host:   scsi3 Channel:  00 ID:  00 Lun:   01
```

```
Vendor:  HP          Model:  HSV210          Rev:
```

```
Type:   Direct-Access                      ANSI SCSI revision:  02
```

Configuring virtual disks from the host

After you set up the virtual disks on the Enterprise Virtual Array and have rescanned or restarted the host, follow the host-specific conventions for configuring these new disk resources. Refer to the documentation that came with your server for specific instructions on setting up disk resources.

Index

A

- accessing
 - Command View EVA, 14
 - multipathing, 14
- adding
 - hosts, 15
- adding hosts, 15

C

- Command View EVA
 - accessing, 14
- Command View EVA, using, 15
- conventions
 - document, 6
- creating virtual disks, 15

D

- document
 - conventions, 6

F

- Fibre Channel adapters

- accessing, 9

H

- help
 - obtaining, 7

M

- multipathing
 - accessing, 14

P

- presenting virtual disks, 15

V

- virtual disks
 - configuring, 16
 - creating, 15
 - presenting, 15
 - verifying, 16